

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A hollow structure plate formed by fusing a plurality of hollow protrusions that are projected in each of two thermoplastic resin sheets with end faces of the hollow protrusions facing against one another,

wherein said hollow protrusions are truncated cone-shaped,

wherein a ratio ~~of a~~ between a total area of ~~[[a]]~~ lower base portions of each of said hollow protrusions and to an area of a circumferential surface liner portions of the thermoplastic resin sheets is ~~in a range from greater than or equal to 0.3 to 0.9 and less than 0.6,~~

wherein the lower base portions of said hollow protrusions are open portions of said hollow protrusions which are opposite to the end faces of the hollow protrusions, and the liner portions of the thermoplastic resin sheets are portions of the thermoplastic resin sheets in which the hollow protrusions are not formed, and

wherein a rising angle of a side face of each of said hollow protrusions in a vertical plane including a central axis of the hollow protrusion is in a range from 50 degrees to 70 degrees.

2-4. (Canceled)

5. (Currently Amended) A method for manufacturing a hollow structure plate comprising:

introducing, using a pair of sheet-introduction plates, two thermoplastic resin sheets into a pressure-reduced chamber;

attracting and attaching the thermoplastic resin sheets respectively to a circumferential surface of each of a pair of upper and lower emboss rollers that are arranged rotatably in said pressure-reduced chamber to form a multitude of hollow protrusions on each of the thermoplastic resin sheets in accordance with a shape of a ~~pin~~ plurality of pins projected ~~in~~ from each of the emboss rollers; and

thermally fusing, using a heater that is disposed between the pair of sheet-introduction plates, the end faces of said hollow protrusions in a position of a contact ~~line~~ point of the emboss rollers continuously;

wherein the pair of sheet-introduction plates are inclined in a direction toward the contact point; and

wherein the emboss rollers ~~satisfying~~ satisfy the following conditions ~~are used~~:

each of said ~~pin~~ is pins is truncated cone-shaped;

a ratio ~~of a~~ between a total area of $[[a]]$ lower base portions of the ~~pin to pins~~ and ~~an a~~ surface area of the circumferential surface of said emboss ~~roller~~ rollers on which the pins are not formed, is ~~in a range from greater than or equal to 0.3 to 0.9~~ and less than 0.6; and

a rising angle of a side face of each of the ~~pin~~ pins in a vertical plane including a central axis of the pin is in a range from 50 degrees to 70 degrees.

6. (Canceled)

7. (Currently Amended) An apparatus for manufacturing a hollow structure plate

comprising:

a pressure-reduced chamber that is evacuated to reduce a pressure inside;

a pair of upper and lower emboss rollers that are supported with bearings rotatably in said pressure-reduced chamber in a state in which circumferential surfaces of the emboss rollers face a front opening portion of said pressure-reduced chamber, wherein a plurality of pins ~~pin~~ provided on one of the emboss rollers ~~being is~~ brought into contact with a plurality of pins ~~pin~~ provided on the other of the rollers via two thermoplastic resin sheets in a position of a contact line point;

a pair of sheet-introduction plates for introducing the two thermoplastic resin sheets into the pressure-reduced chamber, the pair of sheet-introduction plates being inclined in a direction toward the contact point; and

a heater for heating that is arranged at said front opening portion of said pressure-reduced chamber between the pair of sheet-introduction plates;

wherein each of said ~~pin of each~~ pins of said emboss rollers is truncated cone-shaped;

wherein a ratio ~~of a~~ between a total area of $[[a]]$ lower base portions of the ~~pin to~~ pins and ~~an a surface area of the circumferential surface~~ of said emboss ~~roller~~ rollers on which the pins are not formed, is in a range from greater than or equal to 0.3 to 0.9 and less than 0.6; and

wherein a rising angle of a side face of each of the ~~pin~~ pins in a vertical plane including a central axis of the pin is in a range from 50 degrees to 70 degrees.